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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF APPEALS AND PATENT INTERFERENCES

Applicant : LIN

Application No. : 10/722,495

Filed : November 28, 2003

Title : PLASMA DISPLAY DEVICE CAPABLE OF INCREASING  
ATTACHMENT OF HEAT-DISSIPATING PLATE TO  
PLASMA DISPLAY PANEL

Group Art Unit : 2879

Examiner : N.K. Walford

Docket No. : BHT/3167-169

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL COVER SHEET**

Sir:

Transmitted herewith for filing are the following:

1. APPEAL BRIEF, along with Check No. 1321 in the amount of \$510 to cover small entity fee.
2. APPENDICES A-M.

The Commissioner is hereby authorized to charge any fees which may be required for the filing of this document to **Deposit Account No. 501874**.

Respectfully submitted,

Date: April 21, 2008

By:

  
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APPEAL BRIEF

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## Table of Contents

1. Real Party in Interest .....	1
2. Related Appeals And Interferences .....	1
3. Status of Claims .....	1
4. Status of Amendments .....	2
5. Summary of Claimed Subject Matter .....	2
6. Grounds of Rejection to be Reviewed .....	4
7. Argument .....	5
8. Caselaw. ....	16
9. Summary. ....	19
APPENDIX A - Claims on Appeal	
APPENDIX B - Final Office Action of September 21, 2007	
APPENDIX C - Advisory Action of December 11, 2007	
APPENDIX D - Claims with Element Numbers	
APPENDIX E - Figures 1-9	
APPENDIX F - Copies of Pages 3-9 of Specification	
APPENDIX G - U.S. Patent 6,288,489 to Isohata et al.	
APPENDIX H - U.S. Patent Application 2003/0025428 (issued as U.S. Patent 6,700,315) to Kim et al.	
APPENDIX I - U.S. Patent 6,161,910 to Reisenauer et al.	
APPENDIX J - U.S. Patent No. 5,182,489 to Sano	
APPENDIX K - U.S. Patent No. 6,496,163 to Iseki	
APPENDIX L - U.S. Patent No. 7,242,136 to Kim et al.	
APPENDIX M - U.S. Patent No. 6,774,543 to Kim et al.	



Remarks

1. Real Party In Interest

The Real Party In Interest of the patent application on appeal is AU OPTRONICS CORP., NO. 23, LI-HSIN RD., SCIENCE-BASED INDUSTRIAL PARK, HSINCHU, 300, TAIWAN R.O.C., by way of an Assignment recorded at Reel 014748, and Frame 0292.

2. Related Appeals And Interferences

This appeal is not related to any other appeals and/or interferences.

3. Status Of Claims

Claims 1-6, 10, and 12-14 are involved in this appeal, claims 7-9 and 11 having been previously canceled. Claims 1, 3-6, 10, 12 and 14 stand rejected under 35 U.S.C. §103(a) as being rendering obvious by Isohata et al (US 6,288,489) in view of Kim et al. (US PUB 2003/0025428). Claims 2 and 13 stand rejected under 35 U.S.C. §103(a) as being rendered obvious by Isohata et al (US 6,288,489) in view of Kim et al (US PUB 2003/0025428) in further view of Reisenauer et al. (US 6,161,910).

The claims on appeal are set forth in **Appendix A**, while the final Office Action of September 21, 2007 is attached hereto as **Appendix B**.

4. Status Of Amendments

No amendments were submitted in response to the Final Office Action mailed on September 21, 2007.

5. Summary of Claimed Subject Matter

The summary of the claimed subject matter will be presented in conjunction with **Appendix D**, which is a listing of the claims on appeal with the element numbers inserted therein, the element numbers also being referred to in Figures 1-9, attached hereto as **Appendix E**, and copies of pages 3-9 of Appellants specification attached hereto as **Appendix F**.

As noted therein, the first embodiment of the claimed subject matter is directed toward a laminar attachment structure (20) sandwiched between a plasma display panel (10) and a heat-dissipating metal plate (3). The plasma display panel (10) has a front plate (11) and a back plate (12), and the heat-dissipating metal plate (3) is used to dissipate the heat produced by the plasma display panel (10). The laminar attachment structure (20) may be cut into several small pieces (22) and an annular closed loop (21) forms a closed region to accommodate therein the small pieces of the laminar attachment structure (20) [See, Figs. 2-5 and p.p. 6, ll. 11-21]. The laminar attachment structure (20) is divided into an outer closed portion of the closed loop (21) and an inner portion of the small pieces (22) with an annular channel (4) being formed between the closed loop (21) and the pieces of thermal pad or adhesive double tape (22).

Claim 2 depends from claim 1 and further requires laminar attachment structure (20) be a thermal pad. The laminar attachment structure (20) may be a thermal pad or adhesive double tape (22), formed from a complete sheet of thermal pad or adhesive double tape cut into several small pieces (22) [See, Figs. 2-5 and p. 6, ll. 8-21].

Claim 3 depends from claim 1 and further requires the laminar attachment structure be an adhesive double tape. The laminar attachment structure (20) may be a thermal pad or adhesive double tape (22), formed from a complete sheet of thermal pad or adhesive double tape cut into several small pieces (22) [See, Figs. 2-5 and p. 6, ll. 8-21].

Claim 4 depends from claim 1 and further requires that the inner portion of the laminar attachment structure comprises at least one trench which divides the inner portion into at least two separated regions. An annular channel (4) is formed between the closed loop (21) and the pieces of thermal pad or adhesive double tape (22), and a respective trench (5) is formed between the small pieces of thermal pad or adhesive double tape (22) spaced apart from each other [See, Figs. 2-5 and p. 6, ll. 21-25].

Claim 5 depends from claim 1 and requires the at least one vacuum-pumping aperture (31) is disposed above the annular channel (4) [See, Fig. 3, p. 7, ll. 10-13].

Claim 6 also depends from claim 1 and requires the at least one trench (5) of the inner portion of the laminar attachment structure (20) communicates with the external environment through at least one vacuum-pumping aperture (31) formed at the heat-dissipating plate (3) [See, Fig. 3, p. 7, ll. 10-13].

Another embodiment recited in claim 10 is directed toward laminar attachment structures (20') and (20'') for thermally attaching a plasma display panel to a heat-dissipating plate. In this embodiment, the laminar attachment structures (20') and (20'') lack a closed loop [See, Figs. 6-9 as compared with Figs. 2, 2A, 6 and 7]. A plurality of strips are spaced apart from one another by a plurality of spaces and guide trenches (5') are located between the strips to guide the air out of the guide trenches (5') [See, Figs. 6-9, p. 8, ll. 14-23]. As shown in Figs. 8 and 9, the ends of guide trenches (5') between the strips are sealed to have each of the guide trenches (5') form a closed loop or a closed region. Vacuum-pumping apertures (not shown in this embodiment, but illustrated in Fig. 3 with regard to another embodiment) are formed at the heat-dissipating metal plate [See, p. 9, ll. 4-14].

Claim 12 depends from claim 10 and requires the space to be 3mm to 20mm.

Claim 13 depends from claim 10 and requires the laminar attachment structure (20', 20'') to be a thermal pad [See, p. 8, ll.16-20].

Claim 14 depends from claim 10 and requires the laminar attachment structure (20', 20'') to be an adhesive double tape [See, p. 8, ll.16-20].

6. Grounds of Rejection to be Reviewed

- I) whether claims 1 and 3-6 are rendered obvious under 35 U.S.C. §103(a) by Isohata et al (US 6,288,489; hereinafter

“Isohata”) in view of Kim et al. (US PUB 2003/0025428 hereinafter “Kim”);

- II) whether claims 10, 12, and, 14 are rendered obvious under 35 U.S.C. §103(a) by Isohata in view of Kim; and
- III) whether claims 2 and 13 are rendered obvious under 35 U.S.C. §103(a) by Isohata in view of Kim further in view of Reisenauer et al. (US 6,161,910: hereinafter “Reisenauer”)

A copy of the Isohata is attached hereto as **Appendix G**, a copy of Kim is attached hereto as **Appendix H** and a copy of Reisenauer is attached hereto as **Appendix I**.

7. Argument

**I. Rejection of claims 1 and 3-6 as being rendered obvious under 35 U.S.C. §103(a) by Isohata in view of Kim**

On page 2 of the Final Office Action mailed on September 21, 2007, the Examiner interpreted the primary reference to Isohata as follows:

Isohata discloses a plasma display device in figures 4 and 5....wherein the laminar attachment structure comprises an annular channel (item 3) which divides the laminar attachment structure into an **outer closed portion (area outside of item 3)** and an inner portion (inside of item 3)(see FIG. 5C specifically)....The Examiner notes that it is being interpreted that the spacer of Isohata has the same function as the



channel of the instant application. ***A spacer can be defined as a chamber, which is also a channel. (Emphasis added).***

Appellant vigorously traverses this interpretation of Isohata. As noted in the attached **Appendix G**, this reference quite clearly teaches that spacer 3 is a solid object which fills convex part 181, as shown in Fig 5B. Isohata is totally devoid of any disclosure, in the specification, claims and drawings, which indicates that spacer 3 is an annular channel, i.e., an empty space, as postulated by the Examiner. These features are simply not disclosed in any fashion whatsoever by Isohata. However, the Examiner has taken Official Notice that the disclosure of a spacer "can be defined as a chamber," without providing any support for this assumption. Final Office Action, p. 2. As noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be "***capable of such instant and unquestionable demonstration as to defy dispute***" (*Emphasis added*)(citing *In re Knapp Monarch Co.*, 296 F.2d 230, 132 USPQ 6 (CCPA 1961)).

However, the Examiner's assumed definition of "spacer" is far from being indisputable. Namely, Applicant submits that this interpretation is both contrary to the plain meaning of the term (*i.e.*, a spacer is what creates spaces, not the space itself), as well as the use of such terms in the related art. The Examiner's assumption amounts to assuming that a wall and a chamber are interchangeable terms. In addition, Fig. 4, when interpreted in view of Fig. 5 clearly show that the spacers 3 on plate 18 lack depth, *i.e.*, a number of structures shown in the perspective view of Fig. 4 are shown as having depth, but spacers

13 are shown as being solid. This disclosure should be further interpreted in view of Isohata's disclosed purpose of a near gapless contact of the convex parts 181 and the PDP 10. See, Col. 8, ll. 7-9. Furthermore, Col. 8, ll. 33-35 and Fig. 5C would be more reasonably interpreted to teach that the purpose of placing the spacers between adhesives 1c is to allow near gapless contact between the plate 18C and the PDP 10, while saving time and money by avoiding drawing or press working the plate 18C to have grooves. In addition, it is neither possible for the solid spacer 3 of Isohata to be configured so that it "communicates with the external environment" nor does the reference teach this recited limitation.

Applicant also encloses herewith **Appendices J-M**, as U.S. Patent No. 5,182,489 to Sano (teaching a "spacer 22" forming a "space 24," Fig. 1A and 1B; Col. 4, ll. 31-35), U.S. Patent No. 6,496,163 to Iseki (teaching a "spacer 3" forming a "discharge space 4" as shown in Fig. 1 and disclosed in col. 1, l. 65 - Col. 2, l. 2; and a "spacer 20" forming a "space 21" as shown in Fig. 8 and disclosed in col. 5, ll. 65-67), U.S. Patent No. 7,242,136 to Kim et al. (teaching a "spacers 162," Fig. 8; Col. 7, ll. 1-6), and U.S. Patent No. 6,774,543 to Kim et al. (teaching a "spacers 26," Fig. 1; Col. 4, ll. 21-23), respectively. Applicant submits that these references clearly indicate that the understood definition of "spacer" in the relevant art is **a solid object which defines a space**. It follows that the Examiner's assumed definition of spacer as teaching an "annular channel" is an unreasonable interpretation and one which certainly cannot be supported solely by an assumption in Official Notice.

Applicant further notes that contrary to the Examiner's assertion in the Advisory Action of December 11, 2007, Applicant's claims are limited to a channel which forms an empty space. This is because long established caselaw has established that claim limitations be given their broadest reasonable meaning and that these limitations be interpreted in light of the specification. See, e.g., Fig. 3, p. 7, ll. 6-14 of Applicant's specification. Furthermore, the court in In re Cortright, 165 F.3d 1353, 1358, has ruled that "[t]he broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach." However, Dictionary.com defines "channel" as "a groove or furrow." See, <http://dictionary.reference.com/browse/channel> (4/16/08). In addition, the other 21 definitions listed as alternate definitions of a "channel" from Dictionary.com all fail to teach that a channel, as applied in the mechanical and electrical arts, can be an empty space. Accordingly, the only reasonable interpretation in view of this definition and Applicant's specification is that a channel is not an empty space.

Applicant further submits that the above arguments clearly show that the Examiner's rejections lack the requisite "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." KSR International Co. v. Teleflex, 550 U.S. at \_\_\_, 82 USPQ2d at 1396 (citing In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006)).

Accordingly, the Examiner has failed to provide a *prima facie* case of obviousness with regard to the limitation "annular channel," much less "an annular channel which communicates with the external environment" (nor does the reference teach this recited limitation, as recited in Applicant's claim 1). Claims 3-6 stand and fall with their respective

independent claim 1. As a result, the outstanding rejections of Appellant's claims 1 and 3-6 having been rendered obvious under 35 U.S.C. § 103(a) by Isohata taken in view of Kim are respectfully traversed.

As noted above, the Examiner has also cited spacer 3 as dividing "the laminar attachment structure into an **outer closed portion (area outside of item 3)** and an inner portion (inside of item 3)(see FIG. 5C specifically)." However, Applicant respectfully submits that this too, is an unreasonable interpretation of Figs. 4 and 5C of Isohata. Isohata teaches in column 7, lines 57-59 that "...stripe-like convex portions 181 and concave parts 182...are alternately and periodically formed on the plate 18b." Figs. 5A-5C are magnified, cross-sectional views of the circled portion of Fig. 4, which clearly show that the convex parts are open ended. In other words, even if assuming for the sake of argument that either spacers 3 are absent from Fig. 4 or that the Examiner's interpretation of spacer is correct (as noted above, Applicant strongly traversed this assumption), no "outer **closed** portion" (Claim 1, *Emphasis added*) outside of spacer 3 is formed because convex portions 181 are clearly **open ended** structures, as shown in Fig. 4.

Applicant further submits that the above arguments clearly show that the Examiner's rejections lack the requisite "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." KSR International Co. v. Teleflex, 550 U.S. at \_\_\_, 82 USPQ2d at 1396 (citing In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006)).

The Examiner has cited Kim as teaching a plasma display panel 10 and a heat-dissipating plate 24 with apertures 54d. Applicant acquiesces to this characterization, but

notes that, in any event, the reference fails to provide the above-noted deficiencies of Isohata. Namely, Kim fails to teach Applicant's "annular groove" which forms an "outer closed portion," as recited in claim 1. Accordingly, the Examiner has failed to provide a *prima facie* case of obviousness with regard to the limitation "outer closed portion," as recited in Applicant's claim 1. As a result, the outstanding rejections of Appellant's claims 1 and 3-6 having been rendered obvious under 35 U.S.C. § 103(a) by Isohata taken in view of Kim are respectfully traversed.

**II. Rejection of claims 10, 12, and 14 as being rendered obvious under 35 U.S.C. §103(a) by Isohata in view of Kim**

On page 4 of the Final Office Action mailed on September 21, 2007, the Examiner interpreted the primary reference to Isohata as follows:

Isohata discloses a plasma display device in figures 4 and 5....wherein a respective guide trench (item 3) is disposed between each pair of neighboring strips to guide out the air within the spaces of the plurality of strips, two ends of at least one guide trench are sealed to form a closed region (area outside of item 3)....The Examiner notes that it is being interpreted that the spacer of Isohata has the same function as the channel of the instant application. ***A spacer can be defined as a chamber, which is also a channel. (Emphasis added).***

Appellant likewise vigorously traverses this interpretation of Isohata. As noted in the attached **Appendix G**, this reference quite clearly teaches that spacer 3 is a solid object which fills convex part 181, as shown in Fig 5B. Isohata is totally devoid of any disclosure, in the specification, claims and drawings, which indicates that spacer 3 is an annular channel, i.e., an empty space, as postulated by the Examiner. However, the Examiner has taken Official Notice that the disclosure of a spacer "can be defined as a chamber," without providing any support for this assumption. Final Office Action, p. 4. Furthermore, Applicant notes that claim 10 does not recite an annular channel, but instead recites a "guide trench." Accordingly, since the Examiner has failed to present a *prima facie* case of obviousness with regard to Applicant's "guide trench," as recited claim 10. As a result, without regard to further argument which follow, Applicant has traversed the Examiner's rejections under 35 U.S.C. § 103.

If the Examiner's argument on p. 4 of the Final Office Action is considered to have laid forth the requisite *prima facie* case, Applicant further traverses this rejection by clearly showing, similar to the arguments laid forth in Section I, that the Examiner's interpretation of the "spacer 3" of Isohata in Official Notice is both unsupported by any evidence and is also unreasonable.

As noted by the court in In re Ahlert, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be "**capable of such instant and unquestionable demonstration as to defy**

**dispute**" (*Emphasis added*)(citing In re Knapp Monarch Co., 296 F.2d 230, 132 USPQ 6 (CCPA 1961)).

However, the Examiner's assumed definition of "spacer" is far from being indisputable. Namely, Applicant submits that this interpretation is both contrary to both the plain meaning of the term (i.e. a spacer is what creates spaces, not the space itself), as well as the use of such terms in the related art. In addition, Fig. 4, when interpreted in view of Fig. 5 clearly show that the spacers 3 on plate 18 lack depth, i.e., a number of structures shown in the perspective view of Fig. 4 are shown as having depth, but spacers 13 are shown as being solid. This disclosure should be interpreted further in view of Isohata's disclosed purpose of a near gapless contact of the convex parts 181 and the PDP 10. See, Col. 8, ll. 7-9. Furthermore, Col. 8, ll. 33-35 and Fig. 5C would be more reasonably interpreted to teach that the purpose of placing the spacers between adhesives 1c is to allow near gapless contact between the plate 18C and the PDP 10, while saving time and money by avoiding drawing or press working the plate 18C to have grooves. In addition, it is neither possible for the solid spacer 3 of Isohata to be configured so that it "communicates with the external environment" (nor does the reference teach this recited limitation).

Applicant also encloses herewith **Appendices J-M**, as U.S. Patent No. 5,182,489 to Sano (teaching a "spacer 22" forming a "space 24," Fig. 1A and 1B; Col. 4, ll. 31-35), U.S. Patent No. 6,496,163 to Iseki (teaching a "spacer 3" forming a "discharge space 4" as shown in Fig. 1 and disclosed in col. 1, l. 65 - Col. 2, l. 2; and a "spacer 20" forming a

"space 21" as shown in Fig. 8 and disclosed in col. 5, ll. 65-67), U.S. Patent No. 7,242,136 to Kim et al. (teaching a "spacers 162," Fig. 8; Col. 7, ll. 1-6), and U.S. Patent No. 6,774,543 to Kim et al. (teaching a "spacers 26," Fig. 1; Col. 4, ll. 21-23), respectively. Applicant submits that these references clearly indicate that the understood definition of "spacer" in the relevant art is a solid object which defines a space. It follows that the Examiner's assumed definition of a spacer as teaching a "guide trench" is an unreasonable interpretation and one which certainly cannot be supported solely by an assumption in Official Notice.

Applicant further submits that the above arguments clearly show that the Examiner's rejections lack the requisite "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." KSR International Co. v. Teleflex, 550 U.S. at \_\_\_, 82 USPQ2d at 1396 (citing In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006)).

The Examiner has cited Kim as teaching a plasma display panel 10 and a heat-dissipating plate 24 with apertures 54d. Applicant acquiesces to this characterization, but notes that, in any event, the reference fails to provide the above-noted deficiencies of Isohata. Namely, Kim fails to teach Applicant's "guide trench" which forms a "closed portion," as recited in claim 10. Accordingly, the Examiner has failed to provide a *prima facie* case of obviousness with regard to the limitation "guide trench," as recited in Applicant's claims. As a result, the outstanding rejections of Appellant's claims 10, 12, and 14 having been rendered obvious under 35 U.S.C. § 103(a) by Isohata taken in view of Kim are respectfully traversed.



As noted above, the Examiner has also cited Isohata as teaching "two ends of at least one guide trench are sealed to form a ***closed region (area outside of item 3)***." However, Applicant respectfully submits that this too, is an unreasonable interpretation of Figs. 4 and 5C of Isohata. Isohata teaches in column 7, lines 57-59 that "...stripe-like convex portions 181 and concave parts 182...are alternately and periodically formed on the plate 18b," while Figs. 5A-5C are magnified, cross-sectional views of the circled portion of Fig. 4, which clearly show that the that the convex parts are ***open ended, not sealed***. In other words, even if assuming for the sake of argument that either spacers 3 are absent from Fig. 4 or that the Examiner's interpretation of spacer is correct (as noted above, Applicant strongly traversed this assumption), no "two ends of at least one of the guide trenches are ***sealed*** to form a ***closed region***" (Claim 10, *Emphasis added*) outside of spacer 3 are formed because convex portions 181 are clearly ***open ended*** structures, as shown in Fig. 4.

Applicant further submits that the above arguments clearly show that the Examiner's rejections lack the requisite "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." KSR International Co. v. Teleflex, 550 U.S. at \_\_\_, 82 USPQ2d at 1396 (citing In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006)).

As noted above, Kim fails to teach Applicant's "guide trench" which forms a "closed portion," as recited in claim 10. Accordingly, the Examiner has failed to provide a *prima facie* case of obviousness with regard to the limitation "closed portion," as recited in Applicant's claim 10. As a result, the outstanding rejections of Appellant's claims 10, 12,

and 14 having been rendered obvious under 35 U.S.C. § 103(a) by Isohata taken in view of Kim is respectfully traversed.

**III. Rejection of claims 2 and 13 as being rendered obvious under 35 U.S.C. §103(a) by Isohata in view of Kim in further view of Reisenauer et al.**

Claims 2 and 13 depend from claims 1 and 10, respectfully, and stand or fall with their respective independent claims. As a result, the arguments submitted above with respect to Sections I and II also clearly traverse the Examiner's rejections under 35 U.S.C. § 103(a). Furthermore, like Kim, Reisenauer fails to provide the above-noted deficiencies of Isohata. Namely, Reisenauer fails to teach Applicant's "annular channel" or "outer closed portion," as recited in claim 1, or a "guide trench" which forms a "closed portion," as recited in claim 10. The Examiner has also not cited Kim or Reisenauer as providing the above-noted deficiencies of Isohata. It follows that the outstanding rejections of Appellant's claims 2 and 13 having been rendered obvious under 35 U.S.C. § 103(a) by Isohata taken in view of Kim and Reisenauer are respectfully traversed.

## 8. Case Law

As stated in Section 2144.03 of the M.P.E.P., "[o]fficial notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known." Furthermore, as noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be "capable of such instant and unquestionable demonstration as to defy dispute" (citing *In re Knapp Monarch Co.*, 296 F.2d 230, 132 USPQ 6 (CCPA 1961)).

Similarly, Applicant believes that the Examiner is forbidden from assuming that the term "spacer" from Isohata et al. can be reasonably interpreted to be a "channel" or "guide trench," interpretations which are contrary to both the plain meaning of the terms, as well as the use of such terms in the related art. Specifically, Applicant encloses herewith **Appendices J-M**, as U.S. Patent No. 5,182,489 to Sano (teaching a "spacer 22" forming a "space 24," Fig. 1A and 1B; Col. 4, ll. 31-35), U.S. Patent No. 6,496,163 to Iseki (teaching a "spacer 3" forming a "discharge space 4" as shown in Fig. 1 and disclosed in col. 1, l. 65 - Col. 2, l. 2; and a "spacer 20" forming a "space 21" as shown in Fig. 8 and disclosed in col. 5, ll. 65-67), U.S. Patent No. 7,242,136 to Kim et al. (teaching a "spacers 162," Fig. 8; Col. 7, ll. 1-6), and U.S. Patent No. 6,774,543 to Kim et al. (teaching a "spacers 26," Fig. 1; Col. 4, ll. 21-23), respectively.

Furthermore, although the Examiner may broadly interpret the claims, the court in In re Cortright, 165 F.3d 1353, 1358, has ruled that “[t]he broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach.” The court has further stated that “[a]ccordingly, the PTO’s interpretation of claim terms should not be so broad that it conflicts with the meaning given to identical terms in other patents from analogous art. Cf. Morris, 127 F.3d at 1056, 44 USPQ2d at 1029 (approving the board’s definition of claim terms consistent with their definitions in CCPA cases).” In re Cortright, 165 F.3d at 1359.

Furthermore, it is a basic principle of U.S. patent law that it is improper to arbitrarily pick and choose prior art patents and combine selected portions of the selected patents on the basis of Applicant’s disclosure to create a hypothetical combination which allegedly renders a claim obvious. Instead, the Supreme Court, in KSR International Co. v. Teleflex, 550 U.S. at \_\_\_, 82 USPQ2d at 1396 that:

Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, this analysis should be made explicit. See In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006) (“[R]ejections on

obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness").

Appellant submits that the above-presented arguments clearly indicate that the Examiner has failed to provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness" for modifying Isohata et al. and combining this reference with Kim et al. and Reisenauer et al. KSR International Co. v. Teleflex, 550 U.S. at \_\_\_, 82 USPQ2d at 1396 (citing In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006)). Clearly, such a combination is not an acceptable combination under 35 U.S.C. §103. The rejections of Appellant's claims as being rendered by the aforementioned combinations of references under 35 U.S.C. § 103 is respectfully traversed.


9. Summary

Appellant requests this Board to reverse the Examiner's rejections of claims 1 and 3-6 and claims 10, 12, and, 14 as being rendered obvious over Isohata in view of Kim, as well as claims 2 and 13 as being rendered obvious over Isohata in view of Kim and further in view of further view of Reisenauer.

Respectfully submitted,

Date: April 21, 2008

By:

  
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**CUSTOMER NUMBER: 40144**

# APPENDIX A

## CLAIMS ON APPEAL

10/722,495

1. A plasma display device, comprising:

a plasma display panel; and

a heat-dissipating plate, mounted on the plasma display panel and thermally connected to the plasma display panel through a laminar attachment structure;

5 wherein the laminar attachment structure comprises an annular channel which divides the laminar attachment structure into an outer closed portion and an inner portion and communicates with the external environment through at least one vacuum-pumping aperture formed at the heat-dissipating plate.

2. The plasma display device of claim 1, wherein the laminar attachment structure is a thermal pad.

3. The plasma display device of claim 1, wherein the laminar attachment structure is an adhesive double tape.

4. The plasma display device of claim 1, wherein the inner portion of the laminar attachment structure comprises at least one trench which divides the inner portion into at least two separated regions.

## APPENDIX A (page 2)

10/722,495

5. The plasma display device of claim 1, wherein the at least one vacuum-pumping aperture is disposed above the annular channel.

6. The plasma display device of claim 4, wherein the at least one trench of the inner portion of the laminar attachment structure communicates with the external environment through at least one vacuum-pumping aperture formed at the heat-dissipating plate.

Claims 7-9. (Canceled)

10. A plasma display device, comprising:

a plasma display panel; and

5 a heat-dissipating plate, mounted on the plasma display panel and thermally connected to the plasma display panel through a laminar attachment structure having a plurality of strips spaced apart from each other by a plurality of spaces;

wherein a respective guide trench is disposed between each pair of the neighboring strips to guide out the air within the spaces of the plurality of strips, two ends of at least one of the guide trench are sealed to form a closed region which communicates with the external  
10 environment through at least one vacuum-pumping aperture formed at the heat-dissipating plate.



## APPENDIX A (page 3)

10/722,495

Claim 11. (Canceled)

12. The plasma display device of claim 10, wherein the space is 3mm to 20mm.

13. The plasma display device of claim 10, wherein the laminar attachment structure is a thermal pad.

14. The plasma display device of claim 10, wherein the laminar attachment structure is an adhesive double tape.



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# APPENDIX B

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,495	11/28/2003	Yu-Kai Lin	BHT-3167-169	7679
7590 BRUCE H. TROXELL SUITE 1404 5205 LEESBURG PIKE FALLS CHURCH, VA 22041			EXAMINER WALFORD, NATALIE K	
			ART UNIT 2879	PAPER NUMBER
			MAIL DATE 09/21/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/722,495

Applicant(s)

LIN, YU-KAI

Examiner

Natalie K. Walford

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6, 10 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10 and 12-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

The Amendment, filed on June 27, 2007, has been entered and acknowledged by the Examiner. Claims 1-6, 10, and 12-14 are pending in the instant application.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-6, 10, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishohata et al. (US 6,288,489) in view of Kim et al. (US PUB 2003/0025428).

Regarding claim 1, Ishohata discloses a plasma display device in figures 4 and 5, comprising: a plasma display panel (item 10); and a heat-dissipating plate (item 18), mounted on the plasma display panel and thermally connected to the plasma display panel through a laminar attachment structure (items 1a, 1b, 1c); wherein the laminar attachment structure comprises an annular channel (item 3) which divides the laminar attachment structure into an outer closed portion (area outside of item 3) and an inner portion (inside of item 3) (see FIG. 5C specifically), but does not expressly disclose that at least one vacuum-pumping aperture is formed at the heat-dissipating plate, as claimed by Applicant. The Examiner notes that it is being interpreted that the spacer of Ishohata has the same function as the channel of the instant application. A spacer can be defined as a chamber, which is also a channel. Kim is cited to show a plasma display

Art Unit: 2879

device in figure 1 with a plasma display panel (item 10) and a heat-dissipating plate (item 24) with apertures (item 54d) formed. Kim teaches that with the presence of holes in the plate, that the overall area of the plate becomes reduced so that it suffers relatively small pressurizing power (paragraph 55).

Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Isohata's invention to include at least one vacuum-pumping aperture is formed at the heat-dissipating plate as suggested by Kim for reducing the overall area of the plate.

Regarding claim 3, the combined reference of Isohata and Kim disclose the plasma display device of claim 1, wherein the laminar attachment structure is an adhesive double tape (Isohata; column 7, lines 49-52).

Regarding claim 4, the combined reference of Isohata and Kim disclose the plasma display device of claim 1, wherein the inner portion of the laminar attachment structure comprises at least one trench which divides the inner portion into at least two separated regions (Isohata; see FIG. 4, area on item 18).

Regarding claim 5, the combined reference of Isohata and Kim disclose the plasma display device of claim 1, wherein the at least one vacuum-pumping aperture is disposed above the annular channel (Kim; see FIG. 8).

Regarding claim 6, the combined reference of Isohata and Kim disclose the plasma display device of claim 4, wherein the at least one trench of the inner portion of the laminar attachment structure (Isohata; see FIG. 4, area on item 18) communicates with the external

Art Unit: 2879

environment through at least one vacuum-pumping aperture formed at the heat-dissipating plate (Kim; see FIG. 8).

Regarding claim 10, Isohata discloses a plasma display device in figures 4 and 5, comprising: a plasma display panel (item 10); and a heat-dissipating plate (item 18), mounted on the plasma display panel and thermally connected to the plasma display panel through a laminar attachment structure (items 1a, 1b, 1c) having a plurality of strips spaced apart from each other (see FIG. 5C); wherein a respective guide trench (item 3) is disposed between each pair of the neighboring strips to guide out the air within the spaces of the plurality of strips, two ends of at least one guide trench are sealed to form a closed region (area outside of item 3), but does not expressly disclose that at least one vacuum-pumping aperture is formed at the heat-dissipating plate, as claimed by Applicant. The Examiner notes that it is being interpreted that the spacer of Isohata has the same function as the channel of the instant application. A spacer can be defined as a chamber, which is also a channel. Kim is cited to show a plasma display device in figure 1 with a plasma display panel (item 10) and a heat-dissipating plate (item 24) with apertures (item 54d) formed. Kim teaches that with the presence of holes in the plate, that the overall area of the plate becomes reduced so that it suffers relatively small pressurizing power (paragraph 55).

Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Isohata's invention to include at least one vacuum-pumping aperture is formed at the heat-dissipating plate as suggested by Kim for reducing the overall area of the plate.

Regarding claim 12, the combined reference of Isohata and Kim disclose the plasma display device of claim 11, but do not expressly disclose that the space is 3 mm to 20 mm, as

Art Unit: 2879

claimed by Applicant. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the space between the strips 3 mm to 20 mm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 14, the combined reference of Isohata and Kim disclose the plasma display device of claim 10, wherein the laminar attachment structure is an adhesive double tape (Isohata; column 7, lines 49-52).

Claims 2 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isohata et al. (US 6,288,489) in view of Kim et al. (US PUB 2003/0025428) in further view of Reisenauer et al. (US 6,161,910).

Regarding claim 2, the combined reference of Isohata and Kim disclose the plasma display device of claim 1, wherein the laminar attachment structure is a thermal pad, as claimed by Applicant. Isohata and Kim both disclose though that the attachment structure may be an adhesive double tape. Reisenauer is cited to show a heat sink (FIG. 4, item 28) that is connected to a display with a thermal pad (FIG. 4, item 84). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the laminar attachment structure be a thermal pad since it is known in the art that a thermal pad is another way of connecting a heating plate with a display as shown by Reisenauer.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the combined reference of Isohata and Kim to include the laminar

Art Unit: 2879

attachment structure as a thermal pad as suggested by Reisenauer for connecting the display panel and heat dissipating plate.

Regarding claim 13, the combined reference of Isohata and Kim disclose the plasma display device of claim 10, wherein the laminar attachment structure is a thermal pad, as claimed by Applicant. Isohata and Kim both disclose though that the attachment structure may be an adhesive double tape. Reisenauer is cited to show a heat sink (FIG. 4, item 28) that is connected to a display with a thermal pad (FIG. 4, item 84). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the laminar attachment structure be a thermal pad since it is known in the art that a thermal pad is another way of connecting a heating plate with a display as shown by Reisenauer.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the combined reference of Isohata and Kim to include the laminar attachment structure as a thermal pad as suggested by Reisenauer for connecting the display panel and heat dissipating plate.

#### *Response to Arguments*

Applicant's arguments filed June 27, 2007 have been fully considered but they are not persuasive. The Examiner respectfully disagrees with Applicant's arguments. The Examiner first points to figure 5, which shows an annular channel (item 3). Even though Isohata describes the channel as a spacer, it is known that a spacer can be defined as a chamber (i.e. channel). The Examiner is interpreting the spacer of Isohata to have the same function as the channel of the instant application. Regarding Applicant's contention that the Kim reference would have the



technical features of the present invention, the Examiner disagrees. The Examiner notes that solving the same problem notwithstanding is presumed knowledge of the references, since the references anticipate the claimed subject matter. The prior art clearly teaches the claimed invention, which shows that there would have been a reasonable expectation of success. The Examiner also disagrees with Applicant's arguments regarding the trench of figure 4. As seen in figure 4, the top area of item 18 of Isohata shows a plurality of trenches. Regarding the Reisenauer reference, the Examiner points to the thermal pad, which serves as the laminar attachment structure. Hence, Applicant's claim limitations are met as set forth by the rejection.

#### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2879

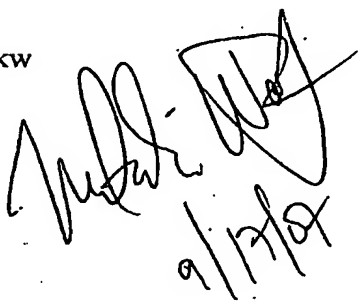
***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie K. Walford whose telephone number is (571)-272-6012. The examiner can normally be reached on Monday-Friday, 8 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

nkW



Handwritten signature and date 9/17/09.

Sikha Roy  
Sikha Roy  
PRIMARY PATENT EXAMINER



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# APPENDIX C

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,495	11/28/2003	Yu-Kai Lin	BHT-3167-169	7679
7590 BRUCE H. TROXELL SUITE 1404 5205 LEESBURG PIKE FALLS CHURCH, VA 22041			EXAMINER WALFORD, NATALIE K	
			ART UNIT 2879	PAPER NUMBER
			MAIL DATE 12/11/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

**Advisory Action  
Before the Filing of an Appeal Brief**

Application No.

10/722,495

Applicant(s)

LIN, YU-KAI

Examiner

Natalie K. Walford

Art Unit

2879

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 14 November 2007 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☐ The period for reply expires \_\_\_\_\_ months from the mailing date of the final rejection.  
b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above; if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**NOTICE OF APPEAL**

2. ☐ The Notice of Appeal was filed on \_\_\_\_\_. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

**AMENDMENTS**

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);  
(b) ☐ They raise the issue of new matter (see NOTE below);  
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
The status of the claim(s) is (or will be) as follows:  
Claim(s) allowed: \_\_\_\_\_.  
Claim(s) objected to: \_\_\_\_\_.  
Claim(s) rejected: 1,3-6,10,12 and 14.  
Claim(s) withdrawn from consideration: \_\_\_\_\_.

**AFFIDAVIT OR OTHER EVIDENCE**

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

**REQUEST FOR RECONSIDERATION/OTHER**

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:  
See Continuation Sheet.  
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). \_\_\_\_\_.  
13. ☐ Other: \_\_\_\_\_.

Continuation of 11. does NOT place the application in condition for allowance because: the Examiner respectfully disagrees with Applicant's arguments. The Examiner notes that no claim limitations specifically states that the annular channel is solid or a chamber. Hence, the Examiner first points to figure 5, which shows an annular channel (item 3). Even though Isohata describes the channel as a spacer, it is known that a spacer can be defined as a chamber (i.e. channel). The Examiner is interpreting the spacer of Isohata to have the same function as the channel of the instant application. Regarding Applicant's contention that the Kim reference would have the technical features of the present invention, the Examiner disagrees. The Examiner notes that solving the same problem notwithstanding is presumed knowledge of the references, since the references anticipate the claimed subject matter. The prior art clearly teaches the claimed invention, which shows that there would have been a reasonable expectation of success. The Examiner also disagrees with Applicant's arguments regarding the trench of figure 4. As seen in figure 4, the top area of item 18 of Isohata shows a plurality of trenches. Regarding the Reisenauer reference, the Examiner points to the thermal pad, which serves as the laminar attachment structure. Hence, Applicant's claim limitations are met as set forth by the rejection.

/Sikha Roy/  
12/7/07  
Primary Examiner, Art Unit 2879

# APPENDIX D

## CLAIMS ON APPEAL

(With Numbering)

10/722,495

1. A plasma display device, comprising:

a plasma display panel (10); and

a heat-dissipating plate (3), mounted on the plasma display panel (10) and thermally

5 connected to the plasma display panel (10) through a laminar attachment structure (20);  
wherein the laminar attachment structure (20) comprises an annular channel (4) which  
divides the laminar attachment structure (20) into an outer closed portion and an inner  
portion and communicates with the external environment through at least one vacuum-  
pumping aperture (31) formed at the heat-dissipating plate (3).

2. The plasma display device of claim 1, wherein the laminar attachment structure  
(20) is a thermal pad (22).

3. The plasma display device of claim 1, wherein the laminar attachment structure  
(20) is an adhesive double tape (22).

4. The plasma display device of claim 1, wherein the inner portion of the laminar attachment structure (20) comprises at least one trench (5) which divides the inner portion into at least two separated regions.

5. The plasma display device of claim 1, wherein the at least one vacuum-pumping aperture (31) is disposed above the annular channel (4).

6. The plasma display device of claim 4, wherein the at least one trench (5) of the inner portion of the laminar attachment structure (20) communicates with the external environment through at least one vacuum-pumping aperture (31) formed at the heat-dissipating plate (3).

Claims 7-9. (Canceled)

10. A plasma display device, comprising:

a plasma display panel; and

a heat-dissipating plate, mounted on the plasma display panel and thermally  
5 connected to the plasma display panel through a laminar attachment structure (20', 20'')  
having a plurality of strips spaced apart from each other by a plurality of spaces;  
wherein a respective guide trench (5') is disposed between each pair of the neighboring

## **APPENDIX D (page 2)**

strips to guide out the air within the spaces of the plurality of strips, two ends of at least one of the guide trench (5') are sealed to form a closed region which communicates with the external environment through at least one vacuum-pumping aperture formed at the heat-dissipating plate.

Claim 11. (Canceled)

12. The plasma display device of claim 10, wherein the space is 3mm to 20mm.

13. The plasma display device of claim 10, wherein the laminar attachment structure (20', 20'') is a thermal pad.

14. The plasma display device of claim 10, wherein the laminar attachment structure (20', 20'') is an adhesive double tape.



# APPENDIX E

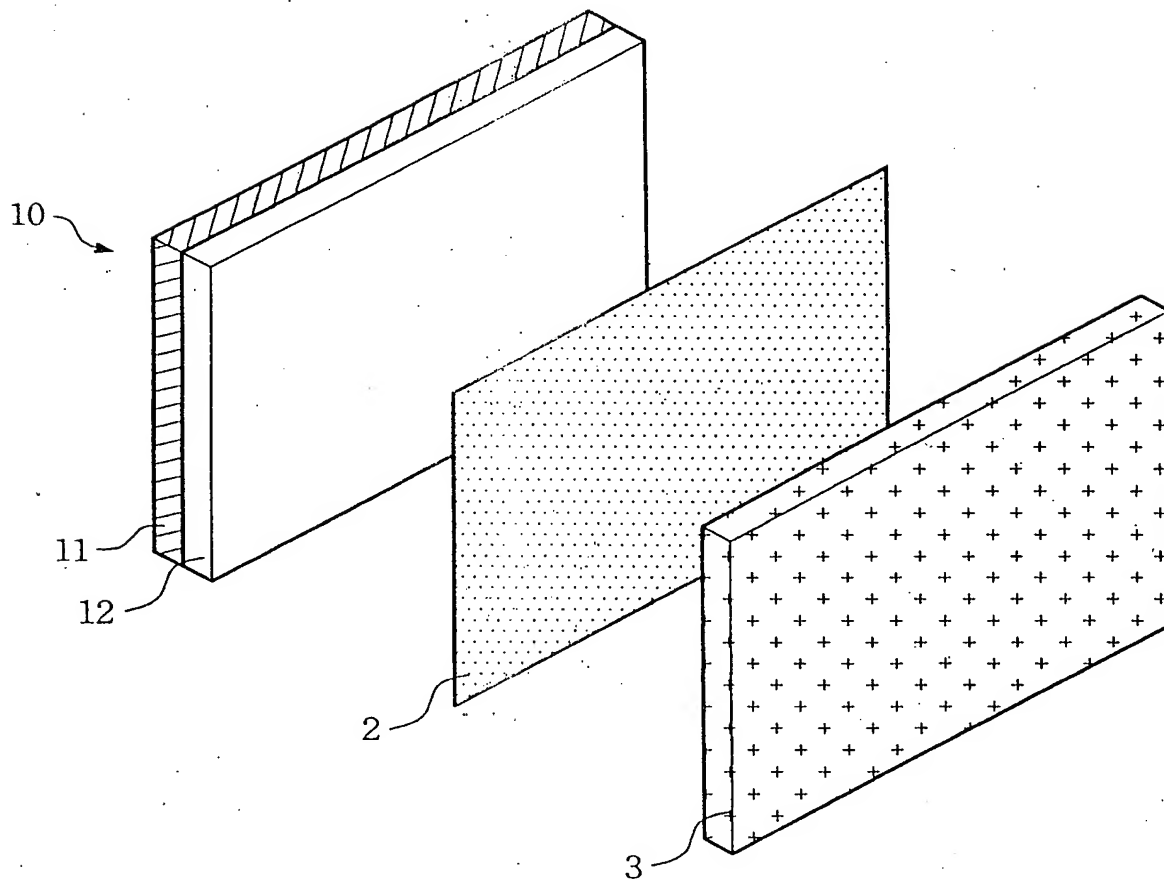


FIG. 1  
(Prior Art)

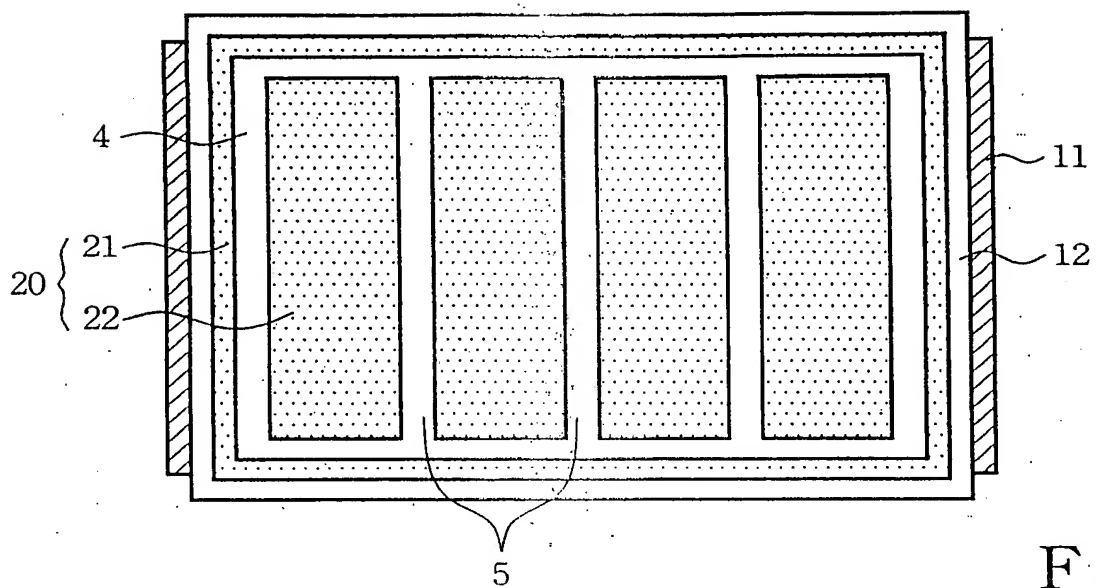


FIG. 2

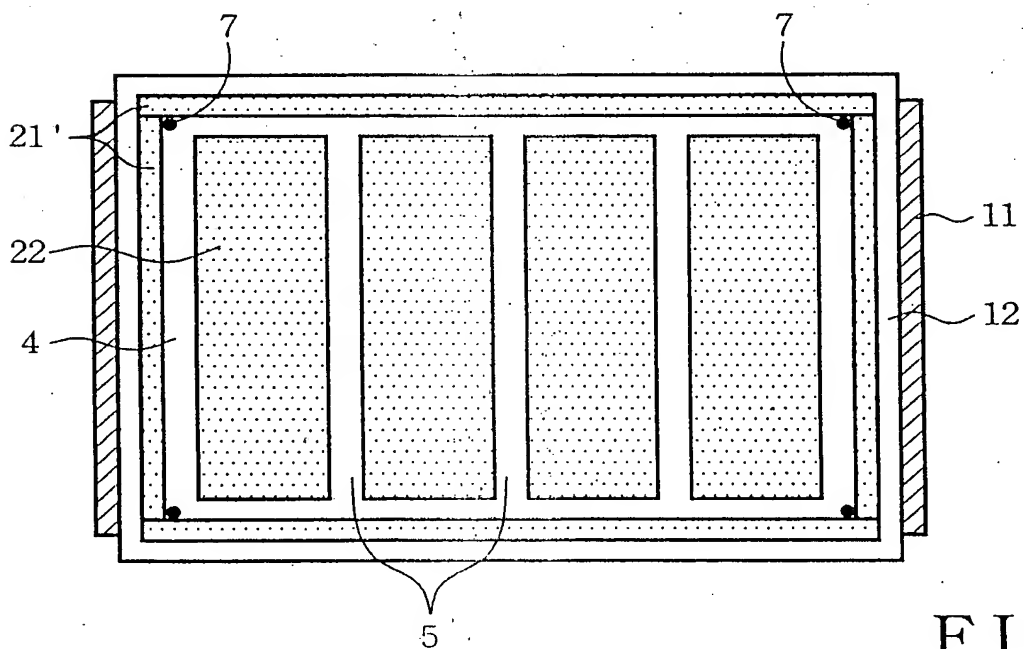


FIG. 2A

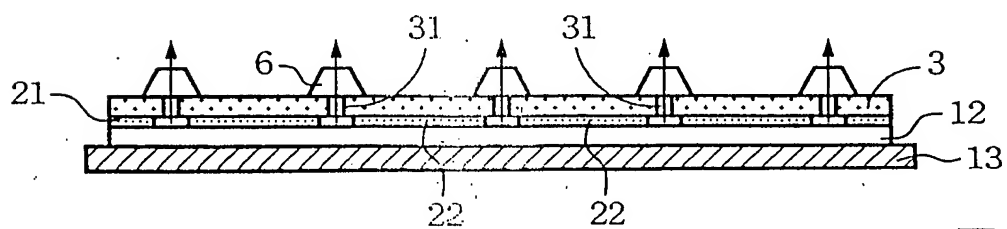


FIG. 3

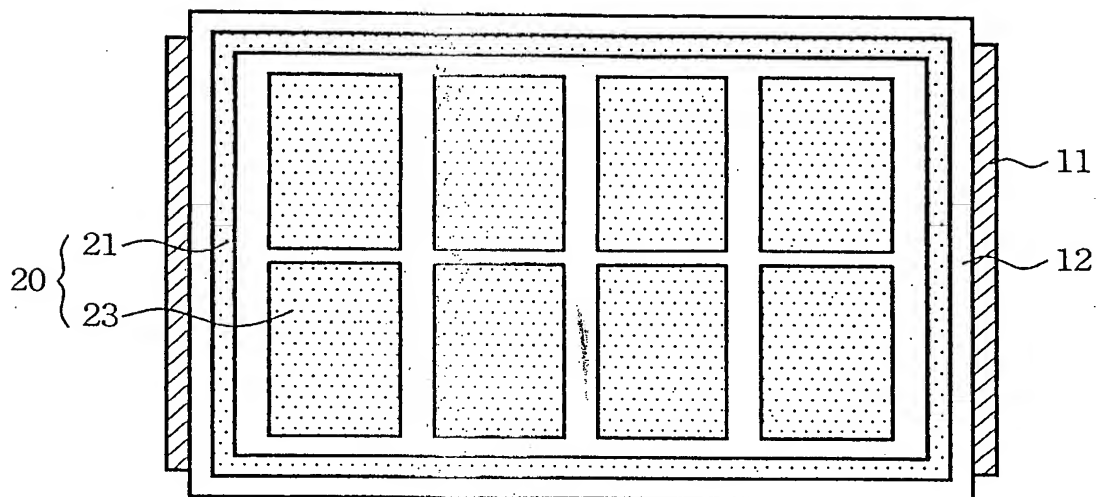


FIG. 4

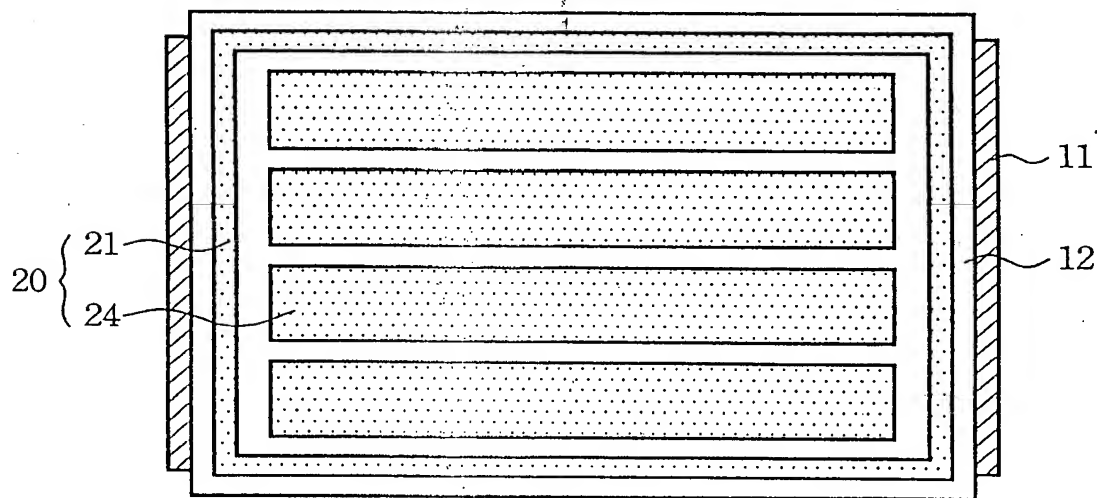


FIG. 5

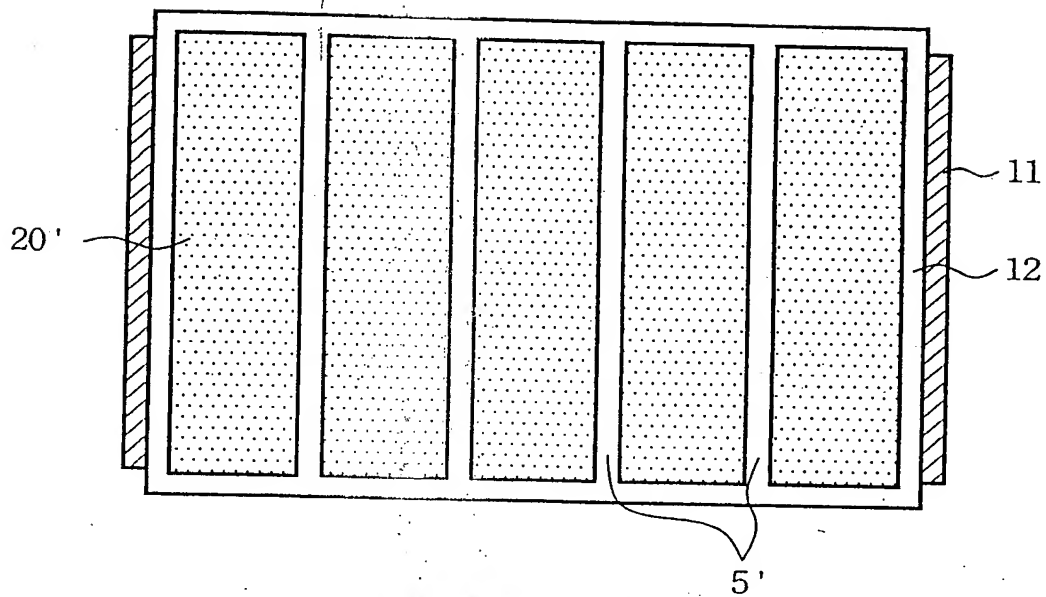


FIG. 6

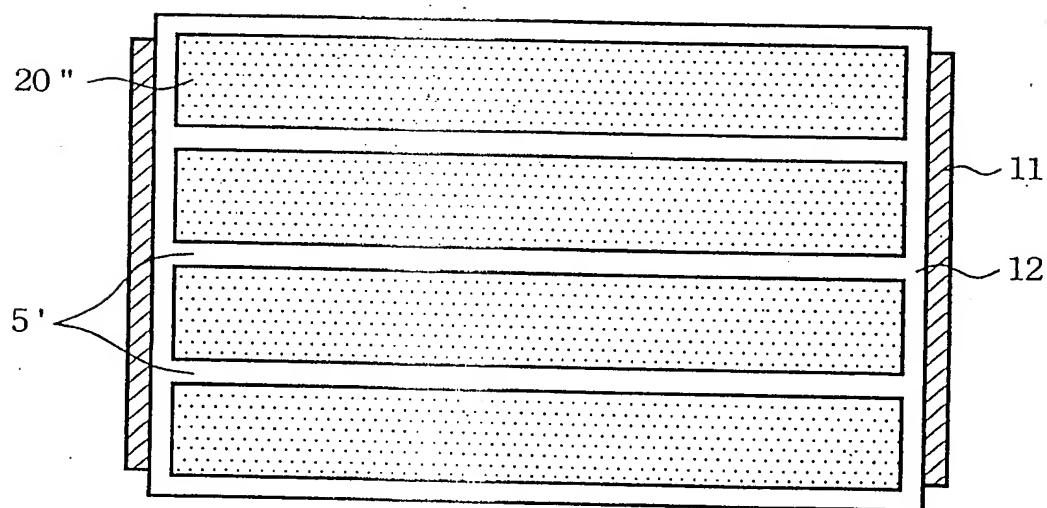


FIG. 7

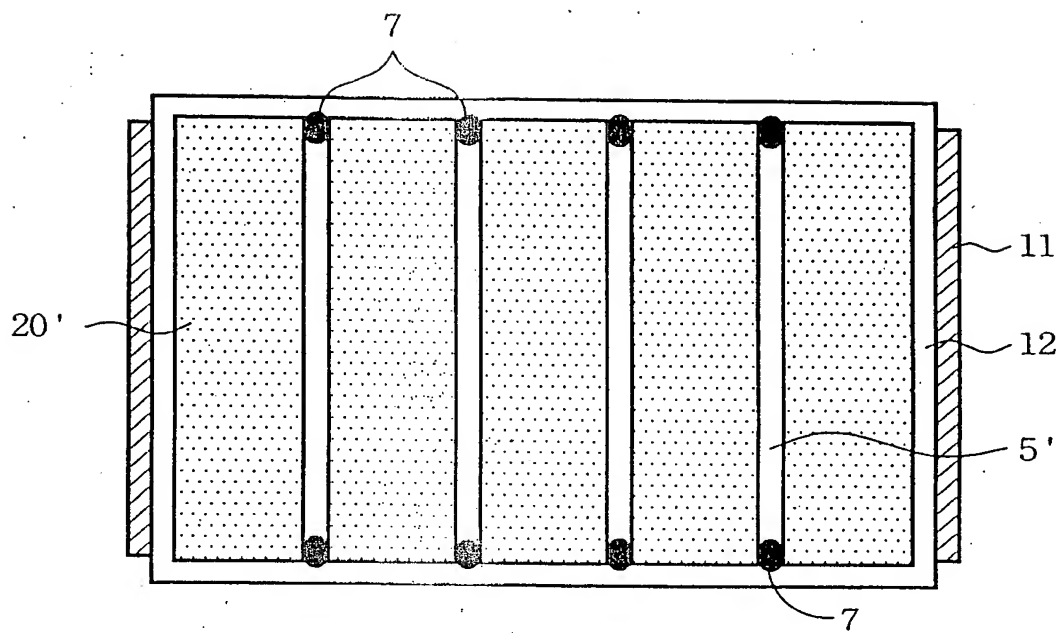


FIG. 8

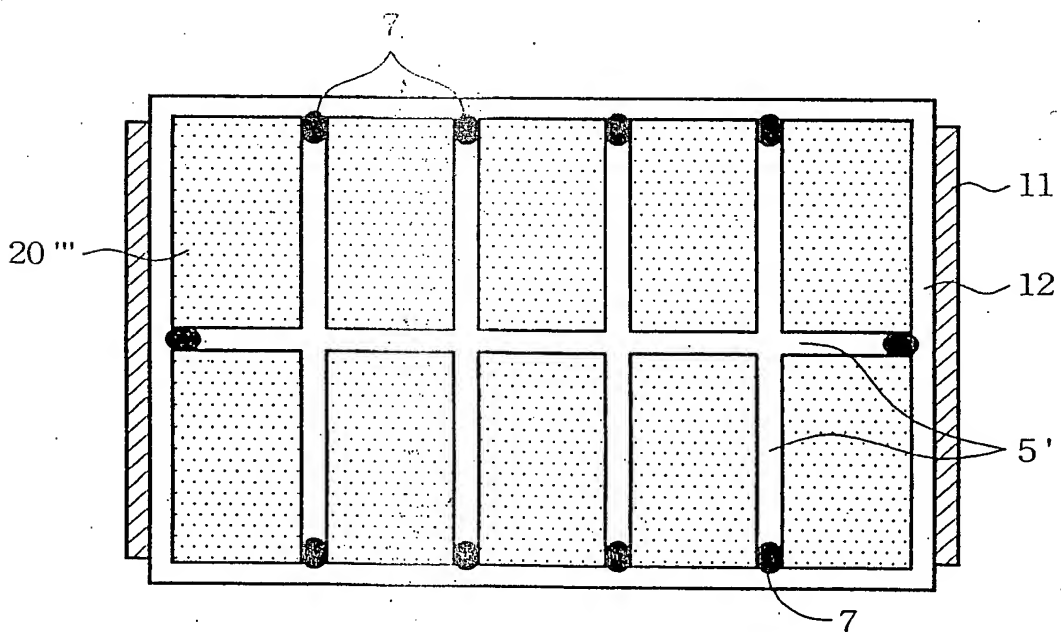


FIG. 9

# APPENDIX F

## Summary of the Invention

[0005]. An object of the present invention is to provide a plasma display device having a laminar attachment structure capable of increasing attachment of a heat-dissipating plate to a plasma display panel.

[0006]. Another object of the present invention is to provide a method for attaching a heat-dissipating plate onto a plasma display panel. A complete sheet of thermal pad or adhesive double tape is divided into several small pieces and a closed loop forming a closed region to accommodate those small pieces of thermal pad or adhesive double tape. The air within the closed region is drawn out by vacuum pumping so as to reduce bubbles formed on the attached surfaces between the heat-dissipating plate and the plasma display panel.

[0007]. A plasma display device disclosed in this invention comprises a plasma display panel and a heat-dissipating plate mounted on the plasma display panel. The heat-dissipating plate is thermally connected to the plasma display panel through a laminar attachment structure. The laminar attachment structure includes an annular channel which divides the laminar attachment structure into an outer closed portion and an inner portion and communicates with the external environment through at least one vacuum-pumping aperture formed at the heat-dissipating plate.

[0008]. In another embodiment of this invention, the laminar attachment structure is constructed as a plurality of strips spaced apart from each other, and a respective guide trench is formed at the spaces between the plurality of strips to guide out the air within the plurality of strips. Moreover, the two ends of the guide trench may be sealed to form a closed region for vacuum pumping.

[0009]. Furthermore, a method for attaching a heat-dissipating plate onto a plasma display panel is disclosed in this invention. Firstly, one face of a laminar attachment structure is attached onto the plasma display panel, wherein the laminar attachment structure comprises an outer closed portion and a plurality of sheet portions spaced apart from each other within the closed portion. Then, apertures are formed at the heat-dissipating plate corresponding to the spaces of the plurality of sheet portions for vacuum pumping. Subsequently, when the heat-dissipating plate is attached onto the other face of the laminar attachment structure, instantaneous pumping is simultaneously performed to draw out the air within the closed portion through the apertures such that the heat-dissipating plate is tightly attached onto the plasma display panel.

#### **Brief Description of the Drawings**

[0010]. The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same becomes better understood by reference to the following detailed

description, when taken in conjunction with the accompanying drawings, wherein:

[0011]. FIG. 1 is a schematic exploded diagram of a heat-dissipating structure of a conventional plasma display device;

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[0012]. FIGs. 2 and 3 are respectively a top view and a sectional view of a laminar attachment structure having a continuous closed loop and sandwiched between a plasma display panel and a heat-dissipating metal plate in accordance with a first embodiment of this invention;

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[0013]. FIG. 2A is a top view of a laminar attachment structure having a discontinuous closed loop in accordance with the first embodiment of this invention;

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[0014]. FIGs. 4 and 5 are respectively a top view of a laminar attachment structure having a continuous closed loop in accordance with a second embodiment of this invention;

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[0015]. FIGs. 6 and 7 are respectively a top view of a laminar attachment structure without a closed loop in accordance with a third embodiment of this invention; and



[0016]. FIGs. 8 and 9 are respectively a top view of a laminar attachment structure with a closed loop in accordance with a third embodiment of this invention.

### Detailed Description of the Preferred Embodiments

[0017]. FIGs. 2 and 3 are respectively a top view and a sectional view of a laminar attachment structure 20 sandwiched between the plasma display panel 10 and the heat-dissipating metal plate 3 in accordance with a first embodiment of this invention. The plasma display panel 10 has a front plate 11 and a back plate 12, and the heat-dissipating metal plate 3 is used to dissipate the heat produced by the plasma display panel 10. The laminar attachment structure 20 may be a thermal pad or adhesive double tape.

[0018]. As shown in FIG. 2, a complete sheet of thermal pad or adhesive double tape is cut into several small pieces 22 and an annular closed loop 21 forming a closed region to accommodate those small pieces of thermal pad or adhesive double tape 22. The small pieces 22 and the closed loop 21 are firstly attached to the backside of the back plate 12 of the plasma display panel, wherein the closed loop 21 is stuck on the outer periphery of the backside of the back plate 12 to enclose the small pieces of thermal pad or adhesive double tape 22 in a spaced attachment on the backside of the back plate 12, thereby forming the laminar attachment structure 20. The laminar attachment structure 20 are then divided into an outer closed portion of the closed loop 21 and an inner

portion of the small pieces 22. An annular channel 4 is formed between the closed loop 21 and the pieces of thermal pad or adhesive double tape 22, and a respective trench 5 is formed between the small pieces of thermal pad or adhesive double tape 22 spaced apart from each other. Since the whole sheet of thermal pad or adhesive double tape has been cut into several small pieces, bubbles produced between the back plate of the plasma display panel and the pieces of thermal pad or adhesive double tape during attachment are certainly diminished.

[0019]. Subsequently, when the heat-dissipating metal plate 3 is stuck to the laminar attachment structure 20 on the backside of the back plate 12 of the plasma display panel, the air within the closed loop 21 is drawn out by vacuum pumping so as to reduce bubbles produced between the heat-dissipating metal plate 3 and the pieces of thermal pad or adhesive double tape 22. One method is to form a plurality of vacuum-pumping apertures 31 at the heat-dissipating metal plate 3 corresponding to the spaced trenches 5 of the pieces of thermal pad or adhesive double tape 22 and the annular channel 4. Preferably, those apertures 31 are mounted above the annular channel 4 and the trenches 5. Vacuum suckers 6 are installed on the apertures 31 of the heat-dissipating metal plate 3. When the heat-dissipating metal plate 3 is attached downward to the laminar attachment structure 20, the vacuum suckers 6 are simultaneously used to instantaneously pump out the air within the closed loop 21 through the apertures 31 so that the heat-dissipating metal plate 3 is tightly attached on the back plate 12 of the plasma display panel. The substantial attached area of the

back plate 12 of the plasma display panel to the heat-dissipating metal plate 3 in this invention can be increased to more than 85% of the whole area.

[0020]. The closed loop 21 as shown in FIG. 2 is a continuous loop as a whole. FIG. 2A shows a discontinuous annular closed loop 21'. The discontinuous closed loop 21' is formed by attachment of four slender thermal pads or adhesive double tapes, and glue dots 7 are coated around the joints of the four slender thermal pads or adhesive double tapes to have the discontinuous closed loop 21' form a closed region.

[0021]. FIGs. 4 and 5 are respectively top views of the laminar attachment structure 20 in accordance with a second embodiment of this invention, wherein several small pieces of thermal pad or adhesive double tape 23, 24 accommodated within the closed loop 21 may have different arrangement and shape from FIG. 2.

[0022]. FIGs. 6 and 7 are respectively top views of laminar attachment structures 20' and 20'' without a closed loop in accordance with a third embodiment of this invention. In this embodiment, a complete sheet of thermal pad or adhesive double tape is cut into several small pieces, and the small pieces of thermal pad or adhesive double tape are sandwiched between the heat-dissipating metal plate 3 and the back plate 12 of the plasma display panel in spaced attachment. Since the attached area of the piece of thermal pad or adhesive double tape is small and guide trenches 5' between the pieces of

thermal pad or adhesive double tape can guide the air out of the guide trenches 5'. Therefore, the attached area in this embodiment is still larger than that of the back plate of the plasma display panel to the heat-dissipating metal plate with the whole sheet of thermal pad or adhesive double tape.

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[0023]. FIGs. 8 and 9 are respectively top views of laminar attachment structures 20' and 20''' with a closed loop in accordance with a third embodiment of this invention. In this embodiment, glue dots 7 are coated at the ends of the guide trenches 5' between the small pieces of thermal pad or adhesive double tape to have each of the guide trenches 5' form a closed loop or a closed region. When the heat-dissipating metal plate is attached downward to the laminar attachment structures 20' and 20''', vacuum suckers are simultaneously used to immediately draw out the air within the closed loops through vacuum-pumping apertures formed at the heat-dissipating metal plate corresponding to the guide trenches 5' so that the heat-dissipating metal plate is tightly attached on the back plate 12 of the plasma display panel.

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[0024]. As is understood by a person skilled in the art, the foregoing preferred embodiments of the present invention are illustrated of the present invention rather than limiting of the present invention. It is intended to cover various modifications and similar arrangements included within the spirit and scope of the appended claims, the scope of which should be accorded the broadest interpretation so as to encompass all such modifications and similar structure.

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